PULSE OXIMETRY FOR NEWBORN INFANTS

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Why do we need to recognize heart defects in the newborn period?

The baby might die if we miss the diagnosis

DIAGNOSIS OF CONGENITAL HEART DEFECTS

Prenatal Ultrasound

Newborn Exam

Pulse Oximetry

Echocardiography

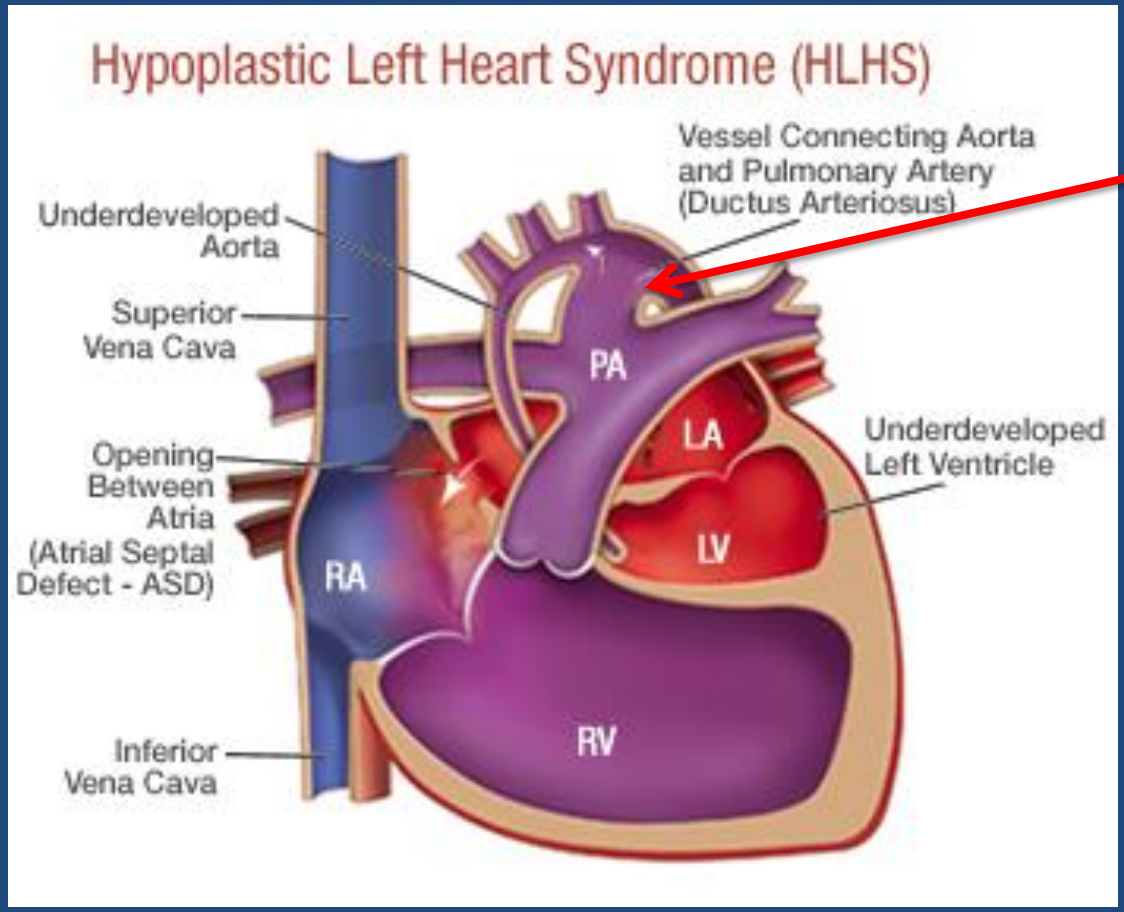
Most congenital heart defects can be repaired, allowing a normal life.

We have a narrow window of time to diagnosis critical congenital heart defects.

The ductus arteriosus in the immediate newborn period often protects the baby from death.

But, the ductus arteriosus closes within days after birth.

Hypoplastic Left Heart Syndrome



When the ductus closes, at several days of age, the baby presents with shock and progresses to death.

If early diagnosis: start prostaglandin infusion to keep the ductus arteriosus open

VITAL SIGNS

Temperature

Heart Rate

Blood Pressure: Right Arm, Leg

Respiratory Rate and Pattern

PULSE OXIMETRY

Yes, this is a vital sign as well as a “screening tool”.

Pulse oximetry supplements a careful exam.

It does not replace a careful exam.

Is visual inspection accurate?

NO

Cyanosis is not evident until the saturation is about 80%.

Single ventricle: oxygen saturation= 85%

Is auscultation adequate ?

NO

Many critical heart defects do not present with a murmur.

Pulse Oximetry

Need accurate acquisition

Need to have a plan for abnormal results

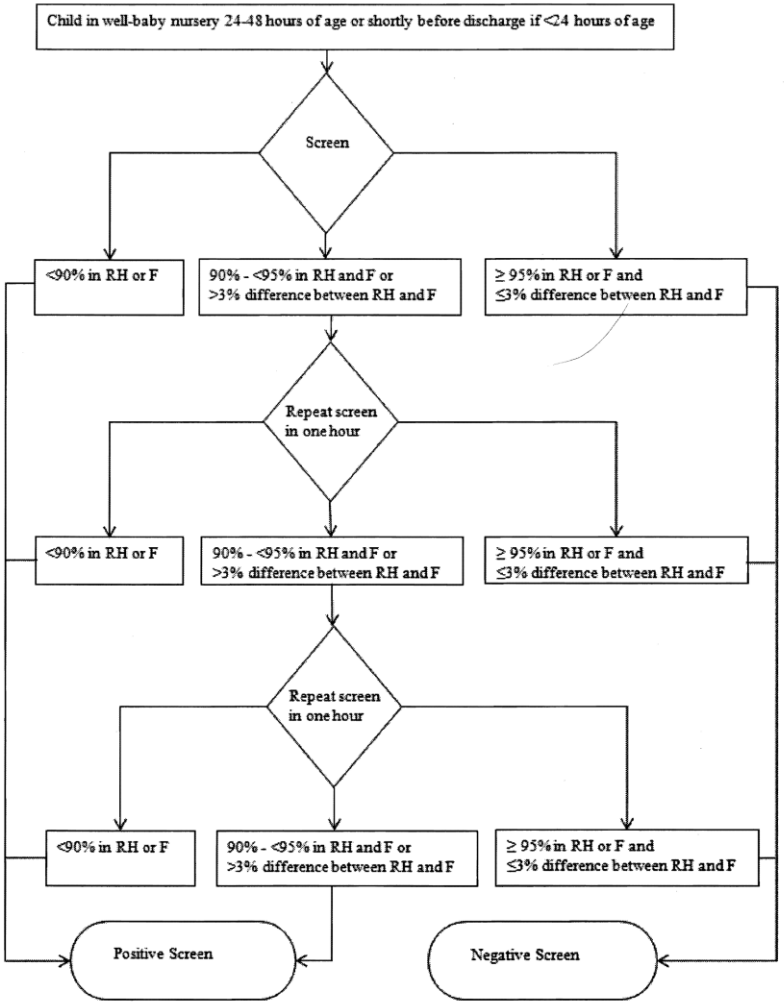


Figure. The proposed pulse oximetry monitoring protocol based on results from the right hand (RH) and either foot (F).

Low Oxygen Saturation:

Cyanotic heart defect

Pulmonary disease

Sleeping baby
Crying baby
Cool extremities

Procedure for low oxygen saturation

Careful evaluation by physician
or other provider

Call neonatologist and/or
pediatric cardiologist

Possible echocardiogram: only
if indicated

Will pulse oximetry diagnose all babies with critical heart defects ?

NO

Some defects that are critical may have a normal oxygen saturation

e.g. Critical coarctation or the aorta
Critical aortic stenosis
Critical pulmonary stenosis

Detection of critical heart defects by oximetry:

HLHS	100%
DORV	100%
d-TGA	100%
AV septal defect	80%
Aortic stenosis	75%
Coarctation	53%
Pulm stenosis	33%

Remember:

Pulse oximetry is an adjunct to a thorough clinical evaluation, not a substitute.

Pulse Oximetry

Usefulness is not limited to the detection of critical heart disease

An abnormal result indicates the need for further evaluation

THANKS FOR LISTENING !!